UNITED STATES PATENT AND TRADEMARK OFFICE

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/659,744 | 09/11/2003 | Yoshio Nabeyama | 121.1054 | 3463 |

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|---|---|
| 21171        7590        01/12/2007<br>STAAS & HALSEY LLP<br>SUITE 700<br>1201 NEW YORK AVENUE, N.W.<br>WASHINGTON, DC 20005 | EXAMINER |
| | MALKOWSKI, KENNETH J |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2613 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|---|---|---|
| 3 MONTHS | 01/12/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| | Application No. | Applicant(s) |
|---|---|---|
| **Office Action Summary** | 10/659,744 | NABEYAMA ET AL. |
| | Examiner | Art Unit | |
| | Kenneth J. Malkowski | 2613 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

1)☒ Responsive to communication(s) filed on <u>03 January 2007</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-5,7,9-15 and 18-29</u> is/are rejected.

7)☒ Claim(s) <u>6,8,16 and 17</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

### Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>11 September 2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All  b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1.      The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2.      Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 2 is unclear because claim 2 indicates that the controlling unit comprises "an arithmetic unit calculating the position controlling amount obtained from the storing unit." However, this claim is dependent upon claim 1 which states, "a storing unit storing predetermined position controlling amounts..." Therefore, it is unclear how the controlling amount can be predetermined and stored yet also subsequently be calculated from the already determined amount. If the amount is already determined, how can said amount be calculated from the already determined amount?

Claim 5 recites the limitation "the light intensity monitoring circuit" in line 6 of claim 5. There is insufficient antecedent basis for this limitation in the claim.

### *Claim Rejections - 35 USC § 103*

3.      The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.      Claims 1, 2, 9-10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over

U.S. Patent No. 6,392,807 to Barbarossa et al. in view of U.S. Patent No. 6,081,388 to Widl et al.

With respect to claims 1 and 14, Barbarossa discloses a chromatic dispersion

compensating apparatus (title: chromatic dispersion compensator), comprising: a chromatic

dispersion compensating module having a spectral unit receiving an input light (Figure 9 shows

input light 915 for example)(column 11 lines 1-7 (input light exits from fiber 710)) and

generating an output light having a predetermined wavelength, a light returning unit designed for

the predetermined wavelength to return the output light to the spectral unit (column 5 lines 17-40

(light output from fiber into dispersion compensator is returned back to original input fiber)), and

a position changing unit changing a relative position between the spectral unit (virtually imaged

phased array)(703, Figure 7a and 7b) and the light returning unit (mirror)(354, Figure 7a and

7b)(abstract, positional adjustment of the movable reflector permits variable control of the beam

path length between the VIPA and the mirror))(column 7 lines 19-26); the position controlling

amounts being used to generate a chromatic dispersion value for a certain wavelength (column 2

lines 5-10 (tunable chromatic dispersion compensator is used to compensate for dispersion

induced by varying wavelength of the given channel))(column 9 lines 5-22 (relative position is

altered to introduce either positive chromatic dispersion based on whether the wavelength is

short or long))(column 6 lines 42-62 (altering transmission distance equalizes dispersion for

longer red wavelengths which travel a shorter distance in the apparatus than do the shorter blue

wavelengths and vise versa))(abstract (the invention uses a VIPA to produce a controlled

variable degree of chromatic dispersion within a plurality of optical channels so as to compensate

for unwanted chromatic dispersion, the variable change in path beam length permits variable

control of the magnitude of chromatic dispersion provided by the compensator)); and a position

controlling unit operating the position changing unit based on the chromatic dispersion value

(abstract: positional adjustment of the movable reflector permits variable control of the beam

path length between the VIPA and the mirror))(column 7 lines 19-26) (703, Figure 7a and 7b)

(abstract: the variable change in path beam length permits variable control of the magnitude of

chromatic dispersion provided by the compensator)) to thereby change the relative position

between the spectral unit (703, Figures 7a and 7b) and the light returning unit in accordance with

said one of the position controlling amounts (Figures 7a and 7b shows the relative position

change between the light returning unit 354 and the spectral unit 703). However, Barbarossa fails

to disclose using a storing unit storing predetermined position-controlling amounts of the

position-changing unit. However, storage of position controlling amounts of a position-changing

unit is known in the art and is not considered a patentably distinct limitation. Widl, from the

same field of endeavor discloses an imaging device (Figure 5), which utilizes a data processing

device (14, Figure 5), a storage device (32, Figure 5) and an actuator (15, Figure 5) which is used

to translate predetermined position-controlling amounts stored in the storage device into a

mechanical motion (32, Figure 5)(column 2 lines 57-63 (data processing device includes stored

values for adjusting the actuating means which result in mechanical adjustments))(column 3 lines

44-51). Therefore, it would have been obvious to one of ordinary skill in the art to couple the

data processing device and storage device as taught by Widl to the actuating means used for

implementing variable positions as disclosed by Barbarossa. The motivation for doing so would

have been to increase the speed of the system by allowing the system to immediately access the

position control amount. Widl also provides the motivation of a cost benefit in that the amount of

sensors used such as the position sensors taught by Barbarossa (Barbarossa: column 8 lines 36-

38) is reduced (Widl: column 3 lines 32-35).

With respect to claims 2 and 15, Barbarossa in view of Widl disclose the chromatic

dispersion compensating apparatus of claim 1, wherein the position controlling unit comprises an

arithmetic unit calculating the position controlling amount obtained from the storing unit (Widl:

actuating signals to be sent to the actuating device are stored in storage of the data processor. The

adjustment values can be determined and stored by mathematical simulations. Adjustment values

can be deposited in storage in functional form rather than tables)).

With respect to claim 9, Barbarossa in view of Widl disclose the chromatic dispersion

compensating apparatus of claim 1, wherein the spectral unit has a virtually imaged phased array

(VIPA) (Barbarossa: 703, Figure 7a and 7b)(Barbarossa: page 8 lines 5-10 housing 702 includes

VIPA 703) with a plurality of passage areas for receiving and outputting light (Barbarossa:

Figure 7a shows multiple optical paths input and output of VIPA 703)), receives the input light

having a plurality of continuous wavelengths within the passage areas (Barbarossa: column 13

lines 34-38 (VIPA controls chromatic dispersion for a plurality of optical channels)), and

performs multiple reflections of the input light to form, through self-interference (Barbarossa:

Figure 8 shows the input signal from VIPA housed in assembly 704 is reflected multiple times

causing self-interference)), output light comprising component lights that are spatially

distinguished from one another (Barbarossa: Figure 4 with wavelengths corresponding to points

474, 470, and 472 are spatially separated)(Barbarossa: column 5 lines 43-48 (different

wavelength components result in different wavelength components on different parts of mirror

354)), and thereby disperses the output light at different output angles, depending on each

constituent wavelength (Barbarossa: column 5 lines 35-40 (different wavelengths travel different

distances, which inherently means the different wavelengths are dispersed at different angles, as

shown in Figure 4)), in a substantially linear dispersing direction (Barbarossa: column 6 lines 15-

24 (longer wavelength at point 472, center wavelength at point 470 and shorter wavelength at

point 474 form the linear dispersing direction of wavelengths)).

With respect to claim 10, Barbarossa in view of Widl disclose the chromatic dispersion

compensating apparatus of claim 9, further comprising: a light returning unit (700, Figure 7a)

comprising a lens focusing (352, figures 7a and 7b (focusing lens)) the output light formed with

the VIPA (703, Figures 7a and 7b (VIPA)) and a mirror that returns the focused output light to

the lens through reflection (354, Figures 7a and 7b) and causes the lens to return the reflected

output light to the VIPA (as shown in Figures 7a and 7b via bidirectional arrows) , thereby

outputting the reflected output light from the VIPA (reflected optical signal 464 is shown being

output to VIPA 703) via the passage areas by multiple reflections within the VIPA (lenses 340,

348 and 350 perform multiple reflections within VIPA 703), and forming in a shape that

provides an approximately constant wavelength dispersion to the output light from the VIPA

independent of each constituent wavelength for the angular dispersion direction of the VIPA

(column 2 lines 20-25 (VIPA is controlled to change path length in order to compensate for

unwanted chromatic dispersion)), and provides different wavelengths in a substantially

perpendicular direction to the angular dispersion direction of the VIPA (Barbarossa: column 6

lines 15-24 (longer wavelength at point 472, center wavelength at point 470 and shorter

wavelength at point 474 form the linear dispersing direction of wavelengths, which is

perpendicular to the different wavelengths propagating through the dispersion compensator))

6.      Claims 3-4 and 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over

U.S. Patent No. 6,392,807 to Barbarossa et al. in view of U.S. Patent No. 6,081,388 to Widl et al.

and further in view of U.S. Patent No. 6,807,208 to Nasu et al.

With respect to claim 3, Barbarossa in view of Widl disclose the chromatic dispersion

compensating apparatus of claim 1 (Barbarossa: title: chromatic dispersion compensator).

However, Barbarossa in view of Widl fails to disclose that the storing unit stores predetermined

temperatures of the spectral unit. Despite this, storing predetermined temperatures of a spectral

unit is known in the art. Nasu, from the same field of endeavor discloses heating a spectral unit

(30, Figure 2 containing lenses 33 and 35) with a heater (thermo-module 62, Figure 1) which is

controlled by a controller (92, Figure 3) which uses stored predetermined temperatures to control

the heater (column 16 lines 60-67 (temperature values of the semiconductor device and the

emission wavelength are stored in the controller 92 and a target temperature is set beforehand

based on the relationship so that a desired wavelength is selected, controller controls the thermo-

module to obtain the target temperature)). Therefore, it would have been obvious to one of

ordinary skill in the art to implement the temperature control system as disclosed by Nasu into

the chromatic dispersion compensating apparatus as disclosed by Barbarossa in view of Widl.

The motivation for doing so would have been to advantageously increase system stability (Nasu:

column 4 lines 41-43), wavelength control (Nasu: column 9 lines 59-65) and reduce the negative

effects of temperature induced system distortions in general.

With respect to claims 4 and 26-29, Barbarossa in view of Widl and further in view of

Nasu disclose the chromatic dispersion compensating apparatus of claim 3 (Barbarossa: title:

chromatic dispersion compensator), further comprising: a heating unit heating the spectral unit
(thermo-module 62, Figure 1); a temperature detecting unit (21, Figure 3) detecting a
temperature of the spectral unit (column 9 lines 60-67 (temperature control of the second thermo-
module is performed based on results of detecting the temperature by the second thermister 21));
and a temperature controlling (92, Figure 3) unit controlling the heating unit (82, Figure 3) based
on the temperatures stored in the storing unit corresponding to the predetermined wavelength of
the output light (column 16 lines 60-67 (temperature values of the semiconductor device and the
emission wavelength are stored in the controller 92 and a target temperature is set beforehand
based on the relationship so that a desired wavelength is selected, controller controls the thermo-
module to obtain the target temperature)).

7.      Claims 7, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.
Patent No. 6,392,807 to Barbarossa et al. in view of U.S. Patent No. 6,081,388 to Widl et al. and
further in view of U.S. Patent Application No. 2003/0223248 to Cronin et al.

With respect to claim 7, Barbarossa in view of Widl disclose the chromatic dispersion
compensating apparatus of claim 1 (Barbarossa: title: chromatic dispersion compensator),
however, Barbarossa in view of Widl fail to disclose wherein the spectral unit generates the
output light having a signal light with a first wavelength and a monitor light with a second
wavelength and an angular dispersion the same as that of the signal light. Cronin, from the same
field of endeavor discloses spectral unit (600, Figure 6) that generates the output light having a
signal light with a first wavelength (figure 6 signal lights 613) and a monitor light with a second
wavelength (figure 6 generates lights 682)(page 1 paragraph 5 (light sources have different
wavelengths))(page 3 paragraph 32 (different wavelengths)) and an angular dispersion the same

as that of the signal light (page 9 paragraph 99 (grating does not change the angular dispersion in radiation that produces monitoring beams, thus monitoring beams reconstruct an image of spatially separated source elements))(angles of dispersion shown in Figure 6 are the same in sections 690 and 610)(column 9 paragraph 99 (monitoring beams are used as a measure of the optical source beams and therefore must have the same angular dispersion))(page 1 paragraph 5 (each light source along the array shares the same selected angular dispersion to create a common optical system propagation direction)). Therefore, it would have been obvious to one of ordinary skill in the art to implement a separate monitoring wavelength as taught by Cronin into the dispersion compensation system as disclosed by Barbarossa in view of Widl. The motivation for doing so would have been to monitor the performance of the optical source beams (page 9 paragraph 97)(page 9 paragraph 100) and can be used to further control light outputs (page 9 paragraph 8).

With respect to claim 11, Barbarossa in view of Widl disclose the chromatic dispersion compensating apparatus of claim 1 (Barbarossa: title: chromatic dispersion compensator), however wherein the spectral unit generates the output light having a signal light with a first wavelength and a monitor light with a second wavelength having an angular dispersion the same as that of the signal light, however, Barbarossa in view of Widl fail to disclose wherein the spectral unit generates the output light having a signal light with a first wavelength and a monitor light with a second wavelength and an angular dispersion the same as that of the signal light. Cronin, from the same field of endeavor discloses spectral unit (600, Figure 6) that generates the output light having a signal light with a first wavelength (figure 6 signal lights 613) and a monitor light with a second wavelength (figure 6 generates lights 682)(page 1 paragraph 5 (light

sources have different wavelengths))(page 3 paragraph 32 (different wavelengths)) and an

angular dispersion the same as that of the signal light (page 9 paragraph 99 (grating does not

change the angular dispersion in radiation that produces monitoring beams, thus monitoring

beams reconstruct an image of spatially separated source elements))(angles of dispersion shown

in Figure 6 are the same in sections 690 and 610)(column 9 paragraph 99 (monitoring beams are

used as a measure of the optical source beams and therefore must have the same angular

dispersion))(page 1 paragraph 5 (each light source along the array shares the same selected

angular dispersion to create a common optical system propagation direction)). Therefore, it

would have been obvious to one of ordinary skill in the art to implement a separate monitoring

wavelength as taught by Cronin into the dispersion compensation system as disclosed by

Barbarossa in view of Widl. The motivation for doing so would have been to monitor the

performance of the optical source beams (page 9 paragraph 97)(page 9 paragraph 100) and can

be used to further control light outputs (page 9 paragraph 8).

Furthermore, Barbarossa in view of Widl and further in view of Cronin fail to disclose

wherein the wavelength of the monitor light is changeable. Despite this, alteration of

wavelengths is an extremely well known advantageous element of optical communication

systems and would have been obvious to one of ordinary skill in the art to implement into the

system as taught by Barbarossa in view of Widl and further in view of Cronin. The motivation

for having a monitor light with a changeable wavelength would have been to save on cost as well

as space considerations by reducing the number of light transmitters with different wavelengths.

With respect to claim 13, Barbarossa in view of Widl and further in view of Cronin

disclose the chromatic dispersion compensating apparatus of claim 7 (Barbarossa: title:

chromatic dispersion compensator), however Barbarossa in view of Widl and further in view of

Cronin fail to disclose wherein the wavelength of the monitor light is changeable. Despite this,

alteration of wavelengths is an extremely well known advantageous element of optical

communication systems and would have been obvious to one of ordinary skill in the art to

implement into the system as taught by Barbarossa in view of Widl and further in view of

Cronin. The motivation for having a monitor light with a changeable wavelength would have

been to save on cost as well as space considerations by reducing the number of light transmitters

with different wavelengths.

8.      Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No.

6,392,807 to Barbarossa et al. in view of U.S. Patent No. 6,822,747 to Li et al.

With respect to claim 18, Barbarossa discloses a chromatic dispersion compensating

module (Barbarossa: title: chromatic dispersion compensator) using a virtually imaged phased

array (VIPA) (Barbarossa: 703, Figure 7a and 7b)(Barbarossa: page 8 lines 5-10 housing 702

includes VIPA 703) that compensates for an error of a chromatic dispersion value generated and

provides a minimum signal loss at the predetermined wavelength and the chromatic dispersion

value (Barbarossa: column 7 lines 50-67 (depending on wavelength dispersion is minimized by

adding or subtracting additional dispersion))(Barbarossa: column 2 lines 1-10 (chromatic

dispersion tuning addresses the need of tuning chromatic dispersion produced due to wavelength

of the signal)). However, Barbarossa fails to disclose compensating for error depending on stored

information. Li, from the same field of endeavor discloses a method and apparatus for chromatic

dispersion compensation (title) wherein chromatic dispersion is compensated compensates for

error depending on stored information (column 4 lines 10-21 (distortion analyzer determines an

amount of chromatic dispersion in the light signal and generates an error signal which is

provided to DSP controller in order to generate a control signal to compensate for

distortion))(column 5 lines 35-47 (potential functions of chromatic dispersion compensations in

the DSP can be estimated by performing numerical simulation and stored in a look-up table in

the DSP chip))(column 6 lines 5-14). Therefore, it would have been obvious to one of ordinary

skill in the art to implement the storing of values to generate dispersion compensation as taught

by Li into the dispersion compensator as taught by Barbarossa. The motivation for doing so

would have been to chromatic dispersion can be continually and adaptively compensated for (Li:

column 6 lines 6-7) and optimal system controllability (column 5 lines 7-8).

9.      Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No.

6,392,807 to Barbarossa et al. in view of U.S. Patent No. 6,081,388 to Widl et al.

        With respect to claims 19 Barbarossa discloses a chromatic dispersion compensating

apparatus, comprising: a chromatic dispersion compensating module (Barbarossa: title:

chromatic dispersion compensator) having a spectral unit receiving an input light and generating

an output light having a predetermined wavelength (Figure 9 shows input light 915 for

example)(column 11 lines 1-7 (input light exits from fiber 710)). However, Barbarossa fails to

disclose that the storing unit stores predetermined temperatures of the spectral unit. Despite this,

storing predetermined temperatures of a spectral unit is known in the art. Nasu, from the same

field of endeavor discloses heating a spectral unit (30, Figure 2 containing lenses 33 and 35) with

a heater (thermo-module 62, Figure 1) which is controlled by a controller (92, Figure 3) which

uses stored predetermined temperatures to control the heater (column 16 lines 60-67

(temperature values of the semiconductor device and the emission wavelength are stored in the

controller 92 and a target temperature is set beforehand based on the relationship so that a

desired wavelength is selected, controller controls the thermo-module to obtain the target

temperature)). Nasu also discloses a temperature detecting unit (21, Figure 3) detecting a

temperature of the spectral unit (column 9 lines 60-67 (temperature control of the second thermo-

module is performed based on results of detecting the temperature by the second thermister 21));

and a temperature controlling (92, Figure 3) unit controlling the heating unit (82, Figure 3) based

on the temperatures stored in the storing unit corresponding to the predetermined wavelength of

the output light (column 16 lines 60-67 (temperature values of the semiconductor device and the

emission wavelength are stored in the controller 92 and a target temperature is set beforehand

based on the relationship so that a desired wavelength is selected, controller controls the thermo-

module to obtain the target temperature)).Therefore, it would have been obvious to one of

ordinary skill in the art to implement the temperature control system as disclosed by Nasu into

the chromatic dispersion compensating apparatus as disclosed by Barbarossa. The motivation for

doing so would have been to advantageously increase system stability (Nasu: column 4 lines 41-

43), wavelength control (Nasu: column 9 lines 59-65) and reduce the negative effects of

temperature induced system distortions in general.

10.     Claims 20-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent

No. 6,392,807 to Barbarossa et al. in view of U.S. Patent No. 6,807,208 to Nasu et al. and further

in view of U.S. Patent No. 6,822,747 to Li et al.

With respect to claims 20-25, Barbarossa discloses a chromatic dispersion compensating

apparatus, comprising: a chromatic dispersion compensating module (Barbarossa: title:

chromatic dispersion compensator) having a spectral unit receiving an input light and generating

an output light having a predetermined wavelength (Figure 9 shows input light 915 for

example)(column 11 lines 1-7 (input light exits from fiber 710)). However, Barbarossa fails to

disclose that the storing unit stores predetermined temperatures of the spectral unit. Despite this,

storing predetermined temperatures of a spectral unit is known in the art. Nasu, from the same

field of endeavor discloses heating a spectral unit (30, Figure 2 containing lenses 33 and 35) with

a heater (thermo-module 62, Figure 1) which is controlled by a controller (92, Figure 3) which

uses stored predetermined temperatures to control the heater (column 16 lines 60-67

(temperature values of the semiconductor device and the emission wavelength are stored in the

controller 92 and a target temperature is set beforehand based on the relationship so that a

desired wavelength is selected, controller controls the thermo-module to obtain the target

temperature)). Nasu also discloses a temperature detecting unit (21, Figure 3) detecting a

temperature of the spectral unit (column 9 lines 60-67 (temperature control of the second thermo-

module is performed based on results of detecting the temperature by the second thermister 21));

and a temperature controlling (92, Figure 3) unit controlling the heating unit (82, Figure 3) based

on the temperatures stored in the storing unit corresponding to the predetermined wavelength of

the output light (column 16 lines 60-67 (temperature values of the semiconductor device and the

emission wavelength are stored in the controller 92 and a target temperature is set beforehand

based on the relationship so that a desired wavelength is selected, controller controls the thermo-

module to obtain the target temperature)).Therefore, it would have been obvious to one of

ordinary skill in the art to implement the temperature control system as disclosed by Nasu into

the chromatic dispersion compensating apparatus as disclosed by Barbarossa in view of Widl.

The motivation for doing so would have been to advantageously increase system stability (Nasu:

column 4 lines 41-43), wavelength control (Nasu: column 9 lines 59-67) and reduce the negative effects of temperature induced system distortions in general.

However, Barbarossa in view of Nasu fail to disclose a light branching unit branching the output light from the spectral unit. Li, from the same field of endeavor discloses a method and apparatus for chromatic dispersion compensation (title) wherein the compensator (100, Figure 1) uses a light branching unit (127, Figure 1) branching the output light from the output light (labeled as compensated light, figure 1) from the spectral unit (130, Figure 1) and a light intensity measuring unit measuring an intensity of the branched output light (125, Figure 1). Therefore, it would have been obvious to one of ordinary skill in the art to implement the light branching and light measurement apparatus as disclosed by Li into the dispersion compensation apparatus as disclosed by Barbarossa in view of Nasu. The motivation for doing so would have been to provide a feedback line for automatically for use in implementing dispersion compensation control (Li: column 4 lines 10-21).

### *Allowable Subject Matter*

11.    Claims 6, 8 and 16-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### *Conclusion*

12.    Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth J. Malkowski whose telephone number is (571) 272-5505. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

1/3/07

KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER